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GB 00/03231

I, the undersigned, being an officer duly authorised in accordance with Section 74(1) and (4) of the Deregulation & Contracting Out Act 1994, to sign and issue certificates on behalf of the Comptroller-General, hereby certify that annexed hereto is a true copy of the documents as originally filed in connection with the patent application identified therein.

In accordance with the Patents (Companies Re-registration) Rules 1982, if a company named in this certificate and any accompanying documents has re-registered under the Companies Act 1980 with the same name as that with which it was registered immediately before re-registration save for the substitution as, or inclusion as, the last part of the name of the words "public limited company" or their equivalents in Welsh, references to the name of the company in this certificate and any accompanying documents shall be treated as references to the name with which it is so re-registered.

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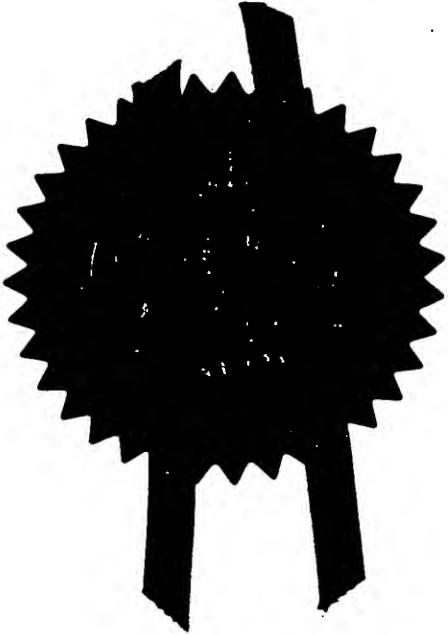
Re-registration under the Companies Act does not constitute a new legal entity but merely subjects the company to certain additional company law rules.

Signed

*M. Jenkins*

Dated

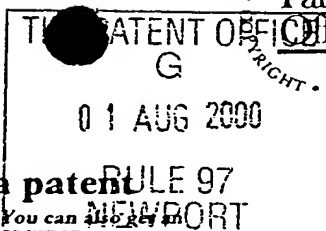
30 August 2000



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P01/7700 0.00-0018800.3

# Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

The Patent Office

Cardiff Road  
Newport  
South Wales  
NP10 8QQ

1. Your reference

P1398

2. Patent application number

(The Patent Office will fill in this part)

1 AUG 2000

0018800.3

3. Full name, address and postcode of the or of each applicant (*underline all surnames*)

Digiterm Limited  
12 Millison Grove  
Solihull  
West Midlands B90 4UN

Patents ADP number (*if you know it*)

If the applicant is a corporate body, give the country/state of its incorporation

04953151001

UK

4. Title of the invention

REMOTELY INTERACTIVE METERING SYSTEM

5. Name of your agent (*if you have one*)

"Address for service" in the United Kingdom to which all correspondence should be sent (*including the postcode*)

Anthony Cundy & Co.  
1 Olton Bridge  
245 Warwick Road  
Solihull B92 9AH

Patents ADP number (*if you know it*)

00002188001

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (*if you know it*) the or each application number

Country

Priority application number  
(*if you know it*)

Date of filing  
(*day / month / year*)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing  
(*day / month / year*)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (*Answer 'Yes' if:*

Yes

- a) any applicant named in part 3 is not an inventor, or
  - b) there is an inventor who is not named as an applicant, or
  - c) any named applicant is a corporate body.
- See note (d))

9. Enter the number of sheets for each of the following items you are filing with this form.  
Do not count copies of the same document

Continuation sheets of this form

Description

8

16

Claim(s)

Abstract

Drawing(s)

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 9/77)

Request for substantive examination (Patents Form 10/77)

Any other documents (please specify)

11. I/We request the grant of a patent on the basis of this application.

Signature

*P. Watts*

Date

Anthony Cundy & Co.

31 July 2000

12. Name and daytime telephone number of person to contact in the United Kingdom

Peter WATTS  
Tel: 0121 708 0080

### Warning

After an application for a patent has been filed, the Comptroller of the Patent Office will consider whether publication or communication of the invention should be prohibited or restricted under Section 22 of the Patents Act 1977. You will be informed if it is necessary to prohibit or restrict your invention in this way. Furthermore, if you live in the United Kingdom, Section 23 of the Patents Act 1977 stops you from applying for a patent abroad without first getting written permission from the Patent Office unless an application has been filed at least 6 weeks beforehand in the United Kingdom for a patent for the same invention and either no direction prohibiting publication or communication has been given, or any such direction has been revoked.

### Notes

- If you need help to fill in this form or you have any questions, please contact the Patent Office on 0645 500505.
- Write your answers in capital letters using black ink or you may type them.
- If there is not enough space for all the relevant details on any part of this form, please continue on a separate sheet of paper and write "see continuation sheet" in the relevant part(s). Any continuation sheet should be attached to this form.
- If you have answered 'Yes' Patents Form 7/77 will need to be filed.
- Once you have filled in the form you must remember to sign and date it.
- For details of the fee and ways to pay please contact the Patent Office.

# Remotely Interactive Metering System

## RIMS (RAMR v2.0) Components

### 1. *Meter Sensor*

RIMS (RAMR V2.0) system will provide a sensor to be situated within easy sensing distance from the rotating disk, this will provide the input to the Meter Reading Collection Hub (MCH).

### 2. *Meter Collection Hub*

The MCH is a microprocessor-controlled device, with the prime responsibility for controlling:

- Communication routine between MCH and RIMS Meters Server software.
- Meter readings, as well as controlling the switching time rates (day and night), or any other ratings, using Real Time circuitry utilising the Rugby Radio Time signal.
- Transmitting the collected readings between the boundaries of the Transmission Window set by the utility.
- Historical meter readings storage on non-volatile media.
- LED for instant on field visual sensor defect detection.

Two different types of M.C.H. are available for the utility board:

- a) Meter Server Auto-Dial (M.C.H. ADL); a meter server with auto-dial out to a specified telephone number.
- b) Meter Server Auto-Answer (M.C.H. AAN); a meter server with auto answering on a specific count of telephone rings.

The M.C.H. can also be equipped with a PASSWORD protection that can be set and altered by the utility board. Passwords provide data protection and data integrity.

### 3. Meters Multiplexes

This device will be operational for multi-storey buildings. RIMS can provide Multi-plexings that uniquely identify a single meter for any required action, whether this action is to:

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- a) Send the reading back to the utility board or for the utility board to interrogate the meter log-ins.
- b) Switch the day and night ratings with seasonally adjusted timings.

### 10 4. RIMS Meters Server

The RIMS Meters Server can be configured to deal with both MCH AAN and ADL. The Server is set to control the data set that is holding the name of customer, address and telephone numbers as well as their IP addresses. Current meter readings (day and night or any other rate  
15 readings), date and time of last meter readings as well as last time database has been updated.

## Fraud Element

20 The RIMS system can predict the unmetered electricity units from previous recordings, and these can be held in memory expansion on the RIMS Meter Hub or the RIMS Meter Server software. Once the normal consumption pattern has been recorded, any units of consumption deviating from the allowed lower threshold boundary, can be reported by  
25 the RIMS system which will provide the probable unmetered consumption to the utility board for further enquiries.

## Meters and Multi-Rating

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- Ordinary meter without external terminal for units consumed indicator.

RIMS (RAMR V2.0) system will provide a sensor to be situated within easy sensing distance from the rotating disk. This will provide the input to the computing box (MCH).

5 Day and Night Rating (with seasonally adjusted timing) can be both switched on and calculated by the RAMR V2.0 system. Organised communication routines can be established between the utility board, RIMS Meters Server software and RIMS Meter Reading Collection Hub (MCH).

10 • External terminal meters.

If the meter installed is provided with an external terminal for reading the units consumed, then the input to the RIMS M.C.H. can be attached to this terminal without the need to install the small sensor.

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Day and night rating (with seasonally adjusted timing), or any future rating that is beneficial to the consumer, can be switched on and calculated by the RAMR V2.0 system M.C.H. Real time radio signal "Rugby Organised" communication routines can be established between RAMR software and RIMS M.C.H.

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• Meters with L.E.D.

25 The sensor that is provided with the RAMR V2.0 system can pick up the L.E.D. signalling and provide the required input via the umbilical cord to the MCH.

Multi-Meters Buildings.

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Many Commercial buildings contain one or more commercial units with each of these commercial units having its own metered electricity supply. Multi-storey flats are a good example of residential buildings. The RIMS's solution is to provide Multi-plexings. The Multi-plexer will uniquely identify a single meter for any required action, whether this action is to:

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- a) Send the reading back to the utility board or for the utility board to interrogate the meter log-ins.

- b) To switch the day and night ratings with seasonally adjusted timings.

## Meter's Sensor Calibrating Unit

5        MSCU is unit designed for the utility's laboratory to display and test the sensor's accumulative disk revolutions. This unit can be modified to display also the units consumed, fraction of the Kilowatts and the kilowatts.

## 10    Data Integrity

      Certain measures have been adopted to insure the integrity and prevention of loss of data. The Meter Collection Hub has a battery backup system for both the microprocessor (for disaster and recovery  
15        purposes) and the metered consumed units non-volatile storage SIM media. In cases of power failure the microprocessor battery will maintain power for it to carry out its house-keeping programme, and will maintain the values held. Once the power is restored batteries will be recharged ready for the next power failure.

20        The second duty of the battery is to maintain the working environment to count up consumption of other meters connected to the Hub and to also report to the Utility the power cut times. Once the power is restored the battery will be recharged and ready for the next power cut.

25        Digital Decimal Odometers can be provided as mechanical dials to represent the visual dials, which provide the numerical representation of the units electronically.

30        The Hubs are also provided with a password protection mechanism. No transmitting or exchange of information between the Hub and the RIMS M.S. software will take place without satisfying the password that protects the meter readings.

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## Billing and Accounts Control

### 5 1. Data Collection

Due to the direct connection between the RIMS Meter Server on the Utility board site and the Hubs on the consumer site, direct and accurate collection of the meter readings are obtained without any delay at any time. This will achieve:

- a) Precise readings of consumed units on the consumer bills and not estimated consumed units
- b) Meter readings can be collected 24 hours a day, 7 days a week without disturbing the occupant(s) of the building.
- c) Minimise the Utility billing time cycle.
- d) Empower the utility to provide customer with multiple choice of rate consumption based on real time consumption, not only bound by the "Economy 7" rate but provide other rates to satisfy the customer needs. M.C.H is equipped with real time controls that can make this option possible.

Cost effectiveness will be found in the following areas:

- Maximum utilisation of human resources and equipment.
- Car purchasing or leasing.
- Fuel.
- Maintenance.
- Inflation costs linked to the above points.
- Elimination of the need to use resource in order to collect meter readings.

## **2. Screen Scraping & Data Base**

A Screen Scraping technique has been developed using the PC's API, 3270 emulation cards or VT communication protocol in order to collect the current customer's Mainframe data and use this as an input to the RIMS Meter Server for the IP addresses. This technique will collect the data irrespective of the Utility's Mainframe manufacturing origin, whether it is IBM, DEC, HP or others.

To eliminate any discrepancies between the Billing and Accounts package running on the Mainframe, and the Customer database held on the RIMS Database, this unique software has been used to assist the Utility with the task of unifying Customers information held on their database. Thus enabling the utility's billing systems to be error free by inputting directly the customer's exact units consumed.

## **3. Systems Hardware/Software knowledge & Experience.**

A wealth of IBM 's Mainframe Transaction processing technique on a variety of IBM's operating systems, and platforms, has been accumulated collectively over the years.

A critical element of this is the Knowledge of MVS and TSO with ISPF as a platform to develop code using CICS for transaction handling systems. Also within DigiTerm Ltd there is considerable knowledge of developing software languages like FORTRAN, PLI, COBOL/1 and COBOL/2, Assembler 390, C, C++, REXX and variety of other software languages.

Data bases design and construction using IMS/DLI and DB2 as well as ORACLE. In addition there is extensive knowledge of VM operating based systems with CMS. Also UNIX based systems whether they are DEC/VAX orientated systems or other manufacturer systems.

Networking packages like SNA, TCP/IP and Routers and CISCO are available. Moreover extensive knowledge of the INTERNET structure design and construction, moreover considerable knowledge of MicorSoft software design using Object Orientated Design methodology and SSDM methodology.

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## So Why Choose RIMS (RAMR V2.0)

There are many points to be considered by the Utilities in favour of the RIMS. Some of these points are:

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- Remote access and Bi-directional communication control over non half-hourly monitoring and meter reading.
- RIMS can report power cut and fraud immediately.
- Empower the Utility to offer better customer care by offering variety of rates and precise billing.
- Use of existing meters and public telephone network. All the technology used is in use and reliable.
- Unlimited meter reading collection at will 24 hours 7 days.
- Adhering to OFFERs guidelines in protecting the consumer's interest.
- Adhering to British approved industry standards British Manufacturing Standards (BS9000).
- Accurate and precise meter readings for billing the consumer. No estimate readings, with single database for customer's information.
- Environmentally friendly, RAMR V2.0 will encourage the reduction of burning fossil fuel by offering a cheap way of monitoring consumption at will and cutting the cost of collecting meter readings.
- Minimal and cost effective installation time and minimal running cost.
- Allows effective utilisation of manpower.
- Design policy to meet the Utility board specifications.
- Competitive prices with technical backups.

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While the present invention as described above is particularly suitable for use in connection with the metering of utilities such as electricity, gas and water, the system may also be used for other metered products or services, for example fuel, vending machines or taxi services.

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